

## NOTICE OF INTENT

Department of Environmental Quality  
Office of Environmental Assessment

NRC Authorization Cleanup Package  
(LAC 33:XV.102, 113, 325, 326, 351, 361, 399, 421, 499, 575, 588, 756, 757, 1503, 1505, and 2017) (RP037)

Under the authority of the Environmental Quality Act, R.S. 30:2001 et seq., and in accordance with the provisions of the Administrative Procedure Act, R.S. 49:950 et seq., the secretary gives notice that rulemaking procedures have been initiated to amend the Radiation Protection regulations, LAC 33:XV.102, 113, 325, 326, 351, 361, 399, 421, 499, 575, 588, 756, 757, 1503, 1505, and 2017 (Log #RP037).

Amendments in this rule include extending the application period for requesting a grievance hearing, correcting references and typographical errors, making clarifications, stating specific requirements for NRC authorization, and restoring a footnote inadvertently lost in previous rulemaking. In addition, Appendix F of Chapter 4 is being moved in its entirety to Appendix D of Chapter 3, to mirror the federal regulations. This rulemaking is necessary to correct minors errors and to keep Louisiana's radiation protection program current with its federal counterpart. The basis and rationale for this rule are to incorporate necessary amendments to preserve compatibility with the Nuclear Regulatory Commission federal regulations.

This proposed rule meets an exception listed in R.S. 30:2019(D)(2) and R.S. 49:953(G)(3); therefore, no report regarding environmental/health benefits and social/economic costs is required. This proposed rule has no known impact on family formation, stability, and autonomy as described in R.S. 49:972.

A public hearing will be held on November 24, 2004, at 1:30 p.m. in the Galvez Building, Oliver Pollock Conference Room C111, 602 N. Fifth Street, Baton Rouge, LA 70802. Interested persons are invited to attend and submit oral comments on the proposed amendments. Should individuals with a disability need an accommodation in order to participate, contact Judith A. Schuerman, Ph.D., at the address given below or at (225) 219-3550. Free parking is available across the street in the Galvez parking garage when the parking ticket is validated by department personnel at the hearing.

All interested persons are invited to submit written comments on the proposed regulation. Persons commenting should reference this proposed regulation by RP037. Such comments must be received no later than December 1, 2004, at 4:30 p.m., and should be sent to Judith A. Schuerman, Ph.D., Office of Environmental Assessment, Regulation Development Section, Box 4314, Baton Rouge, LA 70821-4314 or to FAX (225) 219-3582 or by e-mail to [judith.schuerman@la.gov](mailto:judith.schuerman@la.gov). Copies of this proposed regulation can be purchased by contacting the DEQ Public Records Center at (225) 219-3168. Check or money order is required in

advance for each copy of RP037. This regulation is available on the Internet at <http://www.deq.louisiana.gov/planning/regs/index.htm>.

This proposed regulation is available for inspection at the following DEQ office locations from 8 a.m. until 4:30 p.m.: 602 N. Fifth Street, Baton Rouge, LA 70802; 1823 Highway 546, West Monroe, LA 71292; State Office Building, 1525 Fairfield Avenue, Shreveport, LA 71101; 1301 Gadwall Street, Lake Charles, LA 70615; 201 Evans Road, Building 4, Suite 420, New Orleans, LA 70123; 111 New Center Drive, Lafayette, LA 70508; 110 Barataria Street, Lockport, LA 70374.

Wilbert F. Jordan, Jr.  
Assistant Secretary

**Title 33**  
**ENVIRONMENTAL QUALITY**  
**Part XV. Radiation Protection**  
**Chapter 1. General Provisions**

**§102. Definitions and Abbreviations**

As used in these regulations, these terms have the definitions set forth below. Additional definitions used only in a certain chapter may be found in that chapter.

\* \* \*

*A<sub>2</sub>*—~~refers to the maximum activity of radioactive material, other than special form, radioactive LSA, and SCO material, permitted in a Type A package. These values are either listed in Appendix A of Chapter 15 of these regulations, Table A, or may be derived in accordance with the procedure prescribed in, Appendix A of 10 CFR Part 71~~ Chapter 15 of these regulations.

\* \* \*

*Rem*—a measure of the dose of any radiation to body tissue in terms of its estimated biological effect relative to a dose received from an exposure to one Roentgen (R) of X-rays. One millirem (mRem) is equal to 0.001 Rem. Rem is a special unit of dose equivalent. (See *dose equivalent*.) For the purpose of these regulations, any of the following is considered to be equivalent to a dose of one Rem:

1. - 4. ...

[NOTE: If it is more convenient to measure the neutron flux, or equivalent, than to determine the neutron absorbed dose in rads, one Rem of neutron radiation may, for purposes of these regulations, be assumed to be equivalent to 14 million ( $1.4 \times 10^7$ ) neutrons per square centimeter incident upon the body; or, if there exists sufficient information to estimate with reasonable accuracy the approximate distribution in energy of the neutrons, the incident number of neutrons per square centimeter equivalent to one Rem may be estimated from the table in LAC 33:XV.199.Appendix ~~A~~B.]

\* \* \*

**AUTHORITY NOTE:** Promulgated in accordance with R.S. 30:2001 et seq.  
**HISTORICAL NOTE:** Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 18:34 (January 1992), LR 19:1421 (November 1993), LR 20:650 (June 1994), LR 22:967 (October 1996), LR 24:2089 (November 1998), repromulgated LR 24:2242 (December 1998), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:2563 (November 2000), LR 26:2767 (December 2000), LR 30:1171, 1188 (June 2004), amended by the Office of Environmental

Assessment, LR 30:\*\*.

### **§113. Appeal Procedure, Administrative Review**

A. ...

B. Applications to Request a Hearing

1. Any person who alleges that he or she has been aggrieved by the final actions or decision of the department or administrative authority may make application to the administrative authority, in writing, within ~~230~~ days after the occurrence of the alleged grievance or ~~230~~ days after the promulgation of any directive, order, decision or other written decision or declaration of the administrative authority.

B.2. - F. ...

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 18:34 (January 1992), LR 19:1421 (November 1993), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:2564 (November 2000), amended by the Office of Environmental Assessment, LR 30:\*\*.

## **Chapter 3. Licensing of Radioactive Material**

### **Subchapter D. Specific Licenses**

### **§325. General Requirements for the Issuance of Specific Licenses**

A. - C.5.a. ...

b. persons authorized to possess no more than 1,000 times the quantity specified in ~~Schedule B LAC 33:XV.399.Appendix D of this Chapter~~ or a combination of radioactive material listed therein as given in ~~Schedule B LAC 33:XV.399.Appendix D, Note 1, of this Chapter~~;

C.5.c. - D. ...

1. Each applicant for a specific license authorizing the possession and use of ~~unsealed by-product~~ radioactive material of half-life greater than 120 days and in quantities exceeding  $10^5$  times the applicable quantities set forth in ~~Schedule B LAC 33:XV.399.Appendix D of this Chapter~~ shall submit a decommissioning funding plan as described in Paragraph D.5 of this Section. The decommissioning funding plan must also be submitted when a combination of isotopes is involved if  $R$  divided by  $10^5$  is greater than one (unity rule), where  $R$  is defined here as the sum of the ratios of the quantity of each isotope to the applicable value in LAC 33:XV.399.Appendix A ~~D of this Chapter~~.

2. Each applicant for a specific license authorizing possession and use of ~~radioactive by-product~~ material of half-life greater than 120 days and in quantities specified in Paragraph LAC 33:XV.325.D.4 of this Section shall either:

2.a. - 3.d. ...

4. The following table lists required amounts of financial assurance for decommissioning by quantity of material.

a. Greater than $10^4$ but less than or equal to $10^5$ times the applicable quantities of <u>LAC 33:XV.399.Appendix Schedule DB of this Chapter</u> in unsealed form: (For a combination of isotopes, if R, as defined in Paragraph D.1 of this Section, divided by $10^4$ is greater than 1 but R divided by $10^5$ is less than or equal to 1-).	\$750,000
b. Greater than $10^3$ but less than or equal to $10^4$ times the applicable quantities of <u>LAC 33:XV.399.Appendix Schedule DB of this Chapter</u> in unsealed form: (For a combination of isotopes, if R, as defined in Paragraph D.1 of this Section, divided by $10^3$ is greater than 1 but R divided by $10^4$ is less than or equal to 1-).	\$150,000
c. Greater than $10^{10}$ times the applicable quantities of <u>LAC 33:XV.399.Appendix Schedule DB of this Chapter</u> in sealed sources or plated foils: (For a combination of isotopes, if R, as defined in Paragraph D.1 of this Section, divided by $10^{10}$ is greater than 1-).	\$75,000

5. - 7.d.iv. ...

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 18:34 (January 1992), LR 23:1140 (September 1997), LR 24:2091 (November 1998), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:1018 (May 2000), LR 26:2568 (November 2000), LR 27:1227 (August 2001), amended by the Office of Environmental Assessment, LR 30:\*\*.

### **§326. Special Requirements for Issuance of Certain Specific Licenses for Radioactive Material**

A. - E.1.g. ...

h. The applicant submits the qualifications of the individual(s) designated as the radiation safety officer (RSO) as described in LAC 33:XV.5735.E.

i. - k. ...

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 18:34 (January 1992), LR 24:2092 (November 1998), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:2569 (November 2000), LR 27:1228 (August 2001), LR 30:1188 (June 2004), amended by the Office of Environmental Assessment, LR 30:\*\*.

**§351. Financial Assurance Arrangements**

A. ...

1. the amount of funds to be ensured by such assurance arrangements shall be based on the quantity of ~~by product, source, and special nuclear~~radioactive material of half-life greater than 120 days that the licensee is authorized to use and possess;

A.2. - E. ...

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 18:34 (January 1992), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:2573 (November 2000), LR 27:1228 (August 2001), amended by the Office of Environmental Assessment, LR 30:\*\*.

**§361. Registration of Product Information**

A. Any manufacturer or initial distributor of a sealed source or a device containing a sealed source whose product is intended for use under a specific license may submit a request to the department for evaluation of radiation safety information about its product and for its registration.

B. The request for review must be sent by an appropriate method to the Office of Environmental Services, Permits Division.

C. The request for review of a sealed source or a device must include sufficient information about the design, manufacture, prototype testing, quality control program, labeling, proposed uses, and leak testing. For a device, the request must also include sufficient information about installation, service and maintenance, operating and safety instructions, and its potential hazards, to provide reasonable assurance that the radiation safety properties of the source or device are adequate to protect health and minimize danger to life and property.

D. The department normally evaluates a sealed source or a device using radiation safety criteria in accepted industry standards. If these standards and criteria do not readily apply to a particular case, the department formulates reasonable standards and criteria with the help of the manufacturer or distributor. The department shall use criteria and standards sufficient to ensure that the radiation safety properties of the device or sealed source are adequate to protect health and minimize danger to life and property.

E. After completion of the evaluation, the department issues a certificate of registration to the person making the request. The certificate of registration acknowledges the availability of the submitted information for inclusion in an application for a specific license proposing use of the product.

F. The person submitting the request for evaluation and registration of safety information about the product shall manufacture and distribute the product in accordance with:

1. the statements and representations, including quality control program, contained in the request; and

2. the provisions of the registration certificate.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Environmental Assessment, LR 30:\*\*.

**Subchapter Z. Appendices**

**§399. Schedules A and B, and Appendices A, B, and C, D**

Schedule A. - Schedule B. ...

<b>Appendix A</b>			
<b>Financial Assurance Arrangements</b>			
<b>Recommended Amounts for Mitigation, Liability, and Decommissioning</b>			
<b>By Title</b>	<b>Clean up</b>	<b>Third Party &amp;/or Off-Site Damages</b>	<b>Decommissioning</b>
<b>A. Licensees</b> 1. Manufacturing & Distribution 2. Radiography 3. Gauges 4. Well Logging 5. Nuclear Medicine 6. Rad. Therp. 7. Acad. 8. R & D 9. Instru. Calib. 10. Irradiators 11. Ind. other than gauges 12. Consultants 13. General Lic. 14. Others not listed in category A	As determined by the chosen method	As determined by the chosen method	For Category A as a whole by quantity of material (Q): 1. $Q > 10^{10} \times \text{LAC}$ 33:XV.399.Schedule BAppendix D, Chapter 3, as sealed sources = \$75,000. 2. $(10^4 \times \text{LAC}$ 33:XV.399.Schedule BAppendix D, Chapter 3, unsealed sources) $\geq Q > (10^3 \times \text{LAC}$ 33:XV.399.Schedule BAppendix D, Chapter 3, unsealed sources), or 10-100 mCi source materials, dispersible form = \$150,000. 3. $(10^5 \times \text{LAC}$ 33:XV.399.Schedule BAppendix D, Chapter 3, unsealed sources) $\geq Q > (10^4 \times \text{LAC}$ 33:XV.399.Schedule BAppendix D, Chapter 3, unsealed sources) = \$750,000.

<b>Appendix A</b>			
<b>Financial Assurance Arrangements</b>			
<b>Recommended Amounts for Mitigation, Liability, and Decommissioning</b>			
<b>By Title</b>	<b>Clean up</b>	<b>Third Party &amp;/or Off-Site Damages</b>	<b>Decommissioning</b>
<b>B. Low Quantity</b> 1. In Vitro 2. Gas Chromatograph 3. Greater than or Equal to 100 x to 1000 x Exempt Quantity 4. Unsealed, discrete alpha emitters, 10 $\mu$ Ci total 5. Check sources of sufficient quantity to require leak testing	As determined by the chosen method	As determined by the chosen method	NA for this category.

Appendix B. - Appendix C.Footnote 2. ...

<b>Appendix FD</b>	
<b>Quantities For Use With Decommissioning</b>	
<b>Material</b>	<b>Microcurie*</b>
Americium-241	0.01
Antimony-122	100
Antimony-124	10
Antimony-125	10
Arsenic-73	100
Arsenic-74	10
Arsenic-76	10
Arsenic-77	100
Barium-131	10
Barium-133	10
Barium-140	10
Bismuth-210	1
Bromine-82	10
Cadmium-109	10
Cadmium-115m	10
Cadmium-115	100
Calcium-45	10
Calcium-47	10
Carbon-14	100
Cerium-141	100
Cerium-143	100
Cerium-144	1
Cesium-131	1,000
Cesium-134m	100
Cesium-134	1



<b>Appendix FD</b>	
<b>Quantities For Use With Decommissioning</b>	
<b>Material</b>	<b>Microcurie*</b>
Cesium-135	10
Cesium-136	10
Cesium-137	10
Chlorine-36	10
Chlorine-38	10
Chromium-51	1,000
Cobalt-58m	10
Cobalt-58	10
Cobalt-60	1
Copper-64	100
Dysprosium-165	10
Dysprosium-166	100
Erbium-169	100
Erbium-171	100
Europium-152 (9.2h)	100
Europium-152 (13yr)	1
Europium-154	1
Europium-155	10
Fluorine-18	1,000
Gadolinium-153	10
Gadolinium-159	100
Gallium-72	10
Germanium-71	100
Gold-198	100
Gold-199	100
Hafnium-181	10
Holmium-166	100
Hydrogen-3	1,000
Indium-113m	100
Indium-114m	10
Indium-115m	100
Indium-115	10
Iodine-125	1
Iodine-126	1
Iodine-129	0.1
Iodine-131	1
Iodine-132	10
Iodine-133	1
Iodine-134	10
Iodine-135	10
Iridium-192	10
Iridium-194	100
Iron-55	100
Iron-59	10
Krypton-85	100
Krypton-87	10
Lanthanum-140	10
Lutetium-177	100
Manganese-52	10

<b>Appendix FD</b>	
<b>Quantities For Use With Decommissioning</b>	
<b>Material</b>	<b>Microcurie*</b>
Manganese-54	10
Manganese-56	10
Mercury-197m	100
Mercury-197	100
Mercury-203	10
Molybdenum-99	100
Neodymium-147	100
Neodymium-149	100
Nickel-59	100
Nickel-63	10
Nickel-65	100
Niobium-93m	10
Niobium-95	10
Niobium-97	10
Osmium-185	10
Osmium-191m	100
Osmium-191	100
Osmium-193	100
Palladium-103	100
Palladium-109	100
Phosphorus-32	10
Platinum-191	100
Platinum-193m	100
Platinum-193	100
Platinum-197m	100
Platinum-197	100
Plutonium-239	0.01
Polonium-210	0.1
Potassium-42	10
Praseodymium-142	100
Praseodymium-143	100
Promethium-147	10
Promethium-149	10
Radium-226	0.01
Rhenium-186	100
Rhenium-188	100
Rhodium-103m	100
Rhodium-105	100
Rubidium-86	10
Rubidium-87	10
Ruthenium-97	100
Ruthenium-103	10
Ruthenium-105	10
Ruthenium-106	1
Samarium-151	10
Samarium-153	100
Scandium-46	10
Scandium-47	100
Scandium-48	10

<b>Appendix FD</b>	
<b>Quantities For Use With Decommissioning</b>	
<b>Material</b>	<b>Microcurie*</b>
Selenium-75	10
Silicon-31	100
Silver-105	10
Silver-110m	1
Silver-111	100
Sodium-22	10
Sodium-24	10
Strontium-85	10
Strontium-89	1
Strontium-90	0.1
Strontium-91	10
Strontium-92	10
Sulfur-35	100
Tantalum-182	10
Technetium-96	10
Technetium-97m	100
Technetium-97	100
Technetium-99m	100
Technetium-99	10
Tellurium-125m	10
Tellurium-127m	10
Tellurium-127	100
Tellurium-129m	10
Tellurium-129	100
Tellurium-131m	10
Tellurium-132	10
Terbium-160	10
Thallium-200	100
Thallium-201	100
Thallium-202	100
Thallium-204	10
Thorium (natural)**	100
Thulium-170	10
Thulium-171	10
Tin-113	10
Tin-125	10
Tungsten-181	10
Tungsten-185	10
Tungsten-187	100
Uranium (natural)***	100
Uranium-233	0.01
Uranium-234	0.01
Uranium-235	0.01
Vanadium-48	10
Xenon-131m	1,000
Xenon-133	100
Xenon-135	100
Ytterbium-175	100
Yttrium-90	10

<b>Appendix FD</b>	
<b>Quantities For Use With Decommissioning</b>	
<b>Material</b>	<b>Microcurie*</b>
Yttrium-91	10
Yttrium-92	100
Yttrium-93	100
Zinc-65	10
Zinc-69m	100
Zinc-69	1,000
Zirconium-93	10
Zirconium-95	10
Zirconium-97	10
Any alpha emitting radionuclide not listed above or mixtures of alpha emitters of unknown composition	0.01
Any radionuclide other than alpha emitting radionuclides, not listed above or mixtures of beta emitters of unknown composition	0.1

\* To convert  $\mu\text{Ci}$  to  $\text{kBq}$ , multiply the  $\mu\text{Ci}$  value by 37.

\*\* Based on alpha disintegration rate of Th-232, Th-230 and their daughter products.

\*\*\* Based on alpha disintegration rate of U-238, U-234, and U-235.

Note: This Appendix is retained for use by those agreement states that need to adopt decommissioning regulations compatible with the U.S. Nuclear Regulatory Commission.

Note: Where there is involved a combination of isotopes in known amounts, the limit for the combination should be derived as follows: Determine, for each isotope in the combination, the ratio between the quantity present in the combination and the limit otherwise established for the specific isotope when not in combination. The sum of such ratios for all the isotopes in the combination may not exceed "1" or unity.

**AUTHORITY NOTE:** Promulgated in accordance with R.S. 30:2001 et seq.

**HISTORICAL NOTE:** Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 18:34 (January 1992), LR 20:180 (February 1994), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:2574 (November 2000), LR 27:1228 (August 2001), amended by the Office of Environmental Assessment, LR 30:\*\*\*.

## Chapter 4. Standards for Protection Against Radiation

### Subchapter B. Radiation Protection Programs

#### §421. Radiation Dose Limits for Individual Members of the Public

A. - E. ...

<sup>3</sup>Retrofit shall not be required for locations within facilities where only radiation machines existed prior to January 1, 1994, and met the previous requirements of 5 mSv (0.5 rem) in a year.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 19:1421 (November 1993), LR 22:970 (October 1996), LR 24:2095 (November 1998), repromulgated LR 24:2243 (December 1998), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:2576 (November 2000), amended by the Office of Environmental Assessment, LR 30:\*\*.

### Subchapter Z. Appendices

#### §499. Appendices A, B, C, D, E, ~~and F~~

Appendix A. - Appendix B. Note 4. Example. ...

Appendix C Quantities <sup>1</sup> of Licensed or Registered Sources of Radiation Requiring Labeling	
Radionuclide	Quantity (μCi)*
Hydrogen-3	1,000
Beryllium-7	1,000
Beryllium-10	1
Carbon-11	1,000
Carbon-14	1,000
Fluorine-18	1,000
Sodium-22	10
Sodium-24	100
Magnesium-28	100
Aluminum-26	10
Silicon-31	1,000
Silicon-32	1
Phosphorus-32	10
Phosphorus-33	100

<b>Appendix C</b> <b>Quantities<sup>1</sup> of Licensed or Registered Sources of Radiation</b> <b>Requiring Labeling</b>	
<b>Radionuclide</b>	<b>Quantity (μCi)*</b>
Sulfur-35	100
Chlorine-36	10
Chlorine-38	1,000
Chlorine-39	1,000
Argon-39	1,000
Argon-41	1,000
Potassium-40	100
Potassium-42	1,000
Potassium-43	1,000
Potassium-44	1,000
Potassium-45	1,000
Calcium-41	100
Calcium-45	100
Calcium-47	100
Scandium-43	1,000
Scandium-44m	100
Scandium-44	100
Scandium-46	10
Scandium-47	100
Scandium-48	100
Scandium-49	1,000
Titanium-44	1
Titanium-45	1,000
Vanadium-47	1,000
Vanadium-48	100
Vanadium-49	1,000
Chromium-48	1,000
Chromium-49	1,000
Chromium-51	1,000
Manganese-51	1,000
Manganese-52m	1,000
Manganese-52	100
Manganese-53	1,000
Manganese-54	100
Manganese-56	1,000
Iron-52	100
Iron-55	100
Iron-59	10
Iron-60	1
Cobalt-55	100
Cobalt-56	10
Cobalt-57	100
Cobalt-58m	1,000

<b>Appendix C</b> <b>Quantities<sup>1</sup> of Licensed or Registered Sources of Radiation</b> <b>Requiring Labeling</b>	
<b>Radionuclide</b>	<b>Quantity (μCi)*</b>
Cobalt-58	100
Cobalt-60m	1,000
Cobalt-60	1
Cobalt-61	1,000
Cobalt-62m	1,000
Nickel-56	100
Nickel-57	100
Nickel-59	100
Nickel-63	100
Nickel-65	1,000
Nickel-66	10
Copper-60	1,000
Copper-61	1,000
Copper-64	1,000
Copper-67	1,000
Zinc-62	100
Zinc-63	1,000
Zinc-65	10
Zinc-69m	100
Zinc-69	1,000
Zinc-71m	1,000
Zinc-72	100
Gallium-65	1,000
Gallium-66	100
Gallium-67	1,000
Gallium-68	1,000
Gallium-70	1,000
Gallium-72	100
Gallium-73	1,000
Germanium-66	1,000
Germanium-67	1,000
Germanium-68	10
Germanium-69	1,000
Germanium-71	1,000
Germanium-75	1,000
Germanium-77	1,000
Germanium-78	1,000
Arsenic-69	1,000
Arsenic-70	1,000
Arsenic-71	100
Arsenic-72	100
Arsenic-73	100
Arsenic-74	100

<b>Appendix C</b> <b>Quantities<sup>1</sup> of Licensed or Registered Sources of Radiation</b> <b>Requiring Labeling</b>	
<b>Radionuclide</b>	<b>Quantity (μCi)*</b>
Arsenic-76	100
Arsenic-77	100
Arsenic-78	1,000
Selenium-70	1,000
Selenium-73m	1,000
Selenium-73	100
Selenium-75	100
Selenium-79	100
Selenium-81m	1,000
Selenium-81	1,000
Selenium-83	1,000
Bromine-74m	1,000
Bromine-74	1,000
Bromine-75	1,000
Bromine-76	100
Bromine-77	1,000
Bromine-80m	1,000
Bromine-80	1,000
Bromine-82	100
Bromine-83	1,000
Bromine-84	1,000
Krypton-74	1,000
Krypton-76	1,000
Krypton-77	1,000
Krypton-79	1,000
Krypton-81	1,000
Krypton-83m	1,000
Krypton-85m	1,000
Krypton-85	1,000
Krypton-87	1,000
Krypton-88	1,000
Rubidium-79	1,000
Rubidium-81m	1,000
Rubidium-81	1,000
Rubidium-82m	1,000
Rubidium-83	100
Rubidium-84	100
Rubidium-86	100
Rubidium-87	100
Rubidium-88	1,000
Rubidium-89	1,000
Strontium-80	100
Strontium-81	1,000



<b>Appendix C</b> <b>Quantities<sup>1</sup> of Licensed or Registered Sources of Radiation</b> <b>Requiring Labeling</b>	
<b>Radionuclide</b>	<b>Quantity (μCi)*</b>
Strontium-83	100
Strontium-85m	1,000
Strontium-85	100
Strontium-87m	1,000
Strontium-89	10
Strontium-90	0.1
Strontium-91	100
Strontium-92	100
Yttrium-86m	1,000
Yttrium-86	100
Yttrium-87	100
Yttrium-88	10
Yttrium-90m	1,000
Yttrium-90	10
Yttrium-91m	1,000
Yttrium-91	10
Yttrium-92	100
Yttrium-93	100
Yttrium-94	1,000
Yttrium-95	1,000
Zirconium-86	100
Zirconium-88	10
Zirconium-89	100
Zirconium-93	1
Zirconium-95	10
Zirconium-97	100
Niobium-88	1,000
Niobium-89m (66 min)	1,000
Niobium-89 (122 min)	1,000
Niobium-90	100
Niobium-93m	10
Niobium-94	1
Niobium-95m	100
Niobium-95	100
Niobium-96	100
Niobium-97	1,000
Niobium-98	1,000
Molybdenum-90	100
Molybdenum-93m	100
Molybdenum-93	10
Molybdenum-99	100
Molybdenum-101	1,000
Technetium-93m	1,000

<b>Appendix C</b> <b>Quantities<sup>1</sup> of Licensed or Registered Sources of Radiation</b> <b>Requiring Labeling</b>	
<b>Radionuclide</b>	<b>Quantity (μCi)*</b>
Technetium-93	1,000
Technetium-94m	1,000
Technetium-94	1,000
Technetium-96m	1,000
Technetium-96	100
Technetium-97m	100
Technetium-97	1,000
Technetium-98	10
Technetium-99m	1,000
Technetium-99	100
Technetium-101	1,000
Technetium-104	1,000
Ruthenium-94	1,000
Ruthenium-97	1,000
Ruthenium-103	100
Ruthenium-105	1,000
Ruthenium-106	1
Rhodium-99m	1,000
Rhodium-99	100
Rhodium-100	100
Rhodium-101m	1,000
Rhodium-101	10
Rhodium-102m	10
Rhodium-102	10
Rhodium-103m	1,000
Rhodium-105	100
Rhodium-106m	1,000
Rhodium-107	1,000
Palladium-100	100
Palladium-101	1,000
Palladium-103	100
Palladium-107	10
Palladium-109	100
Silver-102	1,000
Silver-103	1,000
Silver-104m	1,000
Silver-104	1,000
Silver-105	100
Silver-106m	100
Silver-106	1,000
Silver-108m	1
Silver-110m	10
Silver-111	100

<b>Appendix C</b> <b>Quantities<sup>1</sup> of Licensed or Registered Sources of Radiation</b> <b>Requiring Labeling</b>	
<b>Radionuclide</b>	<b>Quantity (μCi)*</b>
Silver-112	100
Silver-115	1,000
Cadmium-104	1,000
Cadmium-107	1,000
Cadmium-109	1
Cadmium-113m	0.1
Cadmium-113	100
Cadmium-115m	10
Cadmium-115	100
Cadmium-117m	1,000
Cadmium-117	1,000
Indium-109	1,000
Indium-110m (69.1min.)	1,000
Indium-110 (4.9h)	1,000
Indium-111	100
Indium-112	1,000
Indium-113m	1,000
Indium-114m	10
Indium-115m	1,000
Indium-115	100
Indium-116m	1,000
Indium-117m	1,000
Indium-117	1,000
Indium-119m	1,000
Tin-110	100
Tin-111	1,000
Tin-113	100
Tin-117m	100
Tin-119m	100
Tin-121m	100
Tin-121	1,000
Tin-123m	1,000
Tin-123	10
Tin-125	10
Tin-126	10
Tin-127	1,000
Tin-128	1,000
Antimony-115	1,000
Antimony-116m	1,000
Antimony-116	1,000
Antimony-117	1,000
Antimony-118m	1,000
Antimony-119	1,000

<b>Appendix C</b> <b>Quantities<sup>1</sup> of Licensed or Registered Sources of Radiation</b> <b>Requiring Labeling</b>	
<b>Radionuclide</b>	<b>Quantity (μCi)*</b>
Antimony-120 (16min.)	1,000
Antimony-120 (5.76d)	100
Antimony-122	100
Antimony-124m	1,000
Antimony-124	10
Antimony-125	100
Antimony-126m	1,000
Antimony-126	100
Antimony-127	100
Antimony-128 (10.4min.)	1,000
Antimony-128 (9.01h)	100
Antimony-129	100
Antimony-130	1,000
Antimony-131	1,000
Tellurium-116	1,000
Tellurium-121m	10
Tellurium-121	100
Tellurium-123m	10
Tellurium-123	100
Tellurium-125m	10
Tellurium-127m	10
Tellurium-127	1,000
Tellurium-129m	10
Tellurium-129	1,000
Tellurium-131m	10
Tellurium-131	100
Tellurium-132	10
Tellurium-133m	100
Tellurium-133	1,000
Tellurium-134	1,000
Iodine-120m	1,000
Iodine-120	100
Iodine-121	1,000
Iodine-123	100
Iodine-124	10
Iodine-125	1
Iodine-126	1
Iodine-128	1,000
Iodine-129	1
Iodine-130	10
Iodine-131	1
Iodine-132m	100
Iodine-132	100

<b>Appendix C</b> <b>Quantities<sup>1</sup> of Licensed or Registered Sources of Radiation</b> <b>Requiring Labeling</b>	
<b>Radionuclide</b>	<b>Quantity (μCi)*</b>
Iodine-133	10
Iodine-134	1,000
Iodine-135	100
Xenon-120	1,000
Xenon-121	1,000
Xenon-122	1,000
Xenon-123	1,000
Xenon-125	1,000
Xenon-127	1,000
Xenon-129m	1,000
Xenon-131m	1,000
Xenon-133m	1,000
Xenon-133	1,000
Xenon-135m	1,000
Xenon-135	1,000
Xenon-138	1,000
Cesium-125	1,000
Cesium-127	1,000
Cesium-129	1,000
Cesium-130	1,000
Cesium-131	1,000
Cesium-132	100
Cesium-134m	1,000
Cesium-134	10
Cesium-135m	1,000
Cesium-135	100
Cesium-136	10
Cesium-137	10
Cesium-138	1,000
Barium-126	1,000
Barium-128	100
Barium-131m	1,000
Barium-131	100
Barium-133m	100
Barium-133	100
Barium-135m	100
Barium-139	1,000
Barium-140	100
Barium-141	1,000
Barium-142	1,000
Lanthanum-131	1,000
Lanthanum-132	100
Lanthanum-135	1,000

<b>Appendix C</b> <b>Quantities<sup>1</sup> of Licensed or Registered Sources of Radiation</b> <b>Requiring Labeling</b>	
<b>Radionuclide</b>	<b>Quantity (μCi)*</b>
Lanthanum-137	10
Lanthanum-138	100
Lanthanum-140	100
Lanthanum-141	100
Lanthanum-142	1,000
Lanthanum-143	1,000
Cerium-134	100
Cerium-135	100
Cerium-137m	100
Cerium-137	1,000
Cerium-139	100
Cerium-141	100
Cerium-143	100
Cerium-144	1
Praseodymium-136	1,000
Praseodymium-137	1,000
Praseodymium-138m	1,000
Praseodymium-139	1,000
Praseodymium-142m	1,000
Praseodymium-142	100
Praseodymium-143	100
Praseodymium-144	1,000
Praseodymium-145	100
Praseodymium-147	1,000
Neodymium-136	1,000
Neodymium-138	100
Neodymium-139m	1,000
Neodymium-139	1,000
Neodymium-141	1,000
Neodymium-147	100
Neodymium-149	1,000
Neodymium-151	1,000
Promethium-141	1,000
Promethium-143	100
Promethium-144	10
Promethium-145	10
Promethium-146	1
Promethium-147	10
Promethium-148m	10
Promethium-148	10
Promethium-149	100
Promethium-150	1,000
Promethium-151	100

<b>Appendix C</b> <b>Quantities<sup>1</sup> of Licensed or Registered Sources of Radiation</b> <b>Requiring Labeling</b>	
<b>Radionuclide</b>	<b>Quantity (μCi)*</b>
Samarium-141m	1,000
Samarium-141	1,000
Samarium-142	1,000
Samarium-145	100
Samarium-146	1
Samarium-147	100
Samarium-151	10
Samarium-153	100
Samarium-155	1,000
Samarium-156	1,000
Europium-145	100
Europium-146	100
Europium-147	100
Europium-148	10
Europium-149	100
Europium-150 (12.62h)	100
Europium-150 (34.2y)	1
Europium-152m	100
Europium-152	1
Europium-154	1
Europium-155	10
Europium-156	100
Europium-157	100
Europium-158	1,000
Gadolinium-145	1,000
Gadolinium-146	10
Gadolinium-147	100
Gadolinium-148	0.001
Gadolinium-149	100
Gadolinium-151	10
Gadolinium-152	100
Gadolinium-153	10
Gadolinium-159	100
Terbium-147	1,000
Terbium-149	100
Terbium-150	1,000
Terbium-151	100
Terbium-153	1,000
Terbium-154	100
Terbium-155	1,000
Terbium-156m (5.0h)	1,000
Terbium-156m (24.4h)	1,000
Terbium-156	100

<b>Appendix C</b> <b>Quantities<sup>1</sup> of Licensed or Registered Sources of Radiation</b> <b>Requiring Labeling</b>	
<b>Radionuclide</b>	<b>Quantity (μCi)*</b>
Terbium-157	10
Terbium-158	1
Terbium-160	10
Terbium-161	100
Dysprosium-155	1,000
Dysprosium-157	1,000
Dysprosium-159	100
Dysprosium-165	1,000
Dysprosium-166	100
Holmium-155	1,000
Holmium-157	1,000
Holmium-159	1,000
Holmium-161	1,000
Holmium-162m	1,000
Holmium-162	1,000
Holmium-164m	1,000
Holmium-164	1,000
Holmium-166m	1
Holmium-166	100
Holmium-167	1,000
Erbium-161	1,000
Erbium-165	1,000
Erbium-169	100
Erbium-171	100
Erbium-172	100
Thulium-162	1,000
Thulium-166	100
Thulium-167	100
Thulium-170	10
Thulium-171	10
Thulium-172	100
Thulium-173	100
Thulium-175	1,000
Ytterbium-162	1,000
Ytterbium-166	100
Ytterbium-167	1,000
Ytterbium-169	100
Ytterbium-175	100
Ytterbium-177	1,000
Ytterbium-178	1,000
Lutetium-169	100
Lutetium-170	100
Lutetium-171	100



<b>Appendix C</b> <b>Quantities<sup>1</sup> of Licensed or Registered Sources of Radiation</b> <b>Requiring Labeling</b>	
<b>Radionuclide</b>	<b>Quantity (μCi)*</b>
Lutetium-172	100
Lutetium-173	10
Lutetium-174m	10
Lutetium-174	10
Lutetium-176m	1,000
Lutetium-176	100
Lutetium-177m	10
Lutetium-177	100
Lutetium-178m	1000
Lutetium-178	1,000
Lutetium-179	1,000
Hafnium-170	100
Hafnium-172	1
Hafnium-173	1,000
Hafnium-175	100
Hafnium-177m	1,000
Hafnium-178m	0.1
Hafnium-179m	10
Hafnium-180m	1,000
Hafnium-181	10
Hafnium-182m	1,000
Hafnium-182	0.1
Hafnium-183	1,000
Hafnium-184	100
Tantalum-172	1,000
Tantalum-173	1,000
Tantalum-174	1,000
Tantalum-175	1,000
Tantalum-176	100
Tantalum-177	1,000
Tantalum-178	1,000
Tantalum-179	100
Tantalum-180m	1,000
Tantalum-180	100
Tantalum-182m	1,000
Tantalum-182	10
Tantalum-183	100
Tantalum-184	100
Tantalum-185	1,000
Tantalum-186	1,000
Tungsten-176	1,000
Tungsten-177	1,000
Tungsten-178	1,000

<b>Appendix C</b> <b>Quantities<sup>1</sup> of Licensed or Registered Sources of Radiation</b>	
<b>Radionuclide</b>	<b>Quantity (μCi)*</b>
Tungsten-179	1,000
Tungsten-181	1,000
Tungsten-185	100
Tungsten-187	100
Tungsten-188	10
Rhenium-177	1,000
Rhenium-178	1,000
Rhenium-181	1,000
Rhenium-182 (12.7h)	1,000
Rhenium-182 (64.0h)	100
Rhenium-184m	10
Rhenium-184	100
Rhenium-186m	10
Rhenium-186	100
Rhenium-187	1,000
Rhenium-188m	1,000
Rhenium-188	100
Rhenium-189	100
Osmium-180	1,000
Osmium-181	1,000
Osmium-182	100
Osmium-185	100
Osmium-189m	1,000
Osmium-191m	1,000
Osmium-191	100
Osmium-193	100
Osmium-194	1
Iridium-182	1,000
Iridium-184	1,000
Iridium-185	1,000
Iridium-186	100
Iridium-187	1,000
Iridium-188	100
Iridium-189	100
Iridium-190m	1,000
Iridium-190	100
Iridium-192 (73.8d)	1
Iridium-192m (1.4min.)	10
Iridium-194m	10
Iridium-194	100
Iridium-195m	1,000
Iridium-195	1,000
Platinum-186	1,000

<b>Appendix C</b> <b>Quantities<sup>1</sup> of Licensed or Registered Sources of Radiation</b>	
<b>Radionuclide</b>	<b>Quantity (μCi)*</b>
Platinum-188	100
Platinum-189	1,000
Platinum-191	100
Platinum-193m	100
Platinum-193	1,000
Platinum-195m	100
Platinum-197m	1,000
Platinum-197	100
Platinum-199	1,000
Platinum-200	100
Gold-193	1,000
Gold-194	100
Gold-195	10
Gold-198m	100
Gold-198	100
Gold-199	100
Gold-200m	100
Gold-200	1,000
Gold-201	1,000
Mercury-193m	100
Mercury-193	1,000
Mercury-194	1
Mercury-195m	100
Mercury-195	1,000
Mercury-197m	100
Mercury-197	1,000
Mercury-199m	1,000
Mercury-203	100
Thallium-194m	1,000
Thallium-194	1,000
Thallium-195	1,000
Thallium-197	1,000
Thallium-198m	1,000
Thallium-198	1,000
Thallium-199	1,000
Thallium-200	1,000
Thallium-201	1,000
Thallium-202	100
Thallium-204	100
Lead-195m	1,000
Lead-198	1,000
Lead-199	1,000
Lead-200	100

<b>Appendix C</b> <b>Quantities<sup>1</sup> of Licensed or Registered Sources of Radiation</b>	
<b>Radionuclide</b>	<b>Quantity (μCi)*</b>
Lead-201	1,000
Lead-202m	1,000
Lead-202	10
Lead-203	1,000
Lead-205	100
Lead-209	1,000
Lead-210	0.01
Lead-211	100
Lead-212	1
Lead-214	100
Bismuth-200	1,000
Bismuth-201	1,000
Bismuth-202	1,000
Bismuth-203	100
Bismuth-205	100
Bismuth-206	100
Bismuth-207	10
Bismuth-210m	0.1
Bismuth-210	1
Bismuth-212	10
Bismuth-213	10
Bismuth-214	100
Polonium-203	1,000
Polonium-205	1,000
Polonium-207	1,000
Polonium-210	0.1
Astatine-207	100
Astatine-211	10
Radon-220	1
Radon-222	1
Francium-222	100
Francium-223	100
Radium-223	0.1
Radium-224	0.1
Radium-225	0.1
Radium-226	0.1
Radium-227	1,000
Radium-228	0.1
Actinium-224	1
Actinium-225	0.01
Actinium-226	0.1
Actinium-227	0.001
Actinium-228	1

<b>Appendix C</b> <b>Quantities<sup>1</sup> of Licensed or Registered Sources of Radiation</b>	
<b>Radionuclide</b>	<b>Quantity (μCi)*</b>
Thorium-226	10
Thorium-227	0.01
Thorium-228	0.001
Thorium-229	0.001
Thorium-230	0.001
Thorium-231	100
Thorium-232	100
Thorium-234	10
Thorium-natural	100
Protactinium-227	10
Protactinium-228	1
Protactinium-230	0.1
Protactinium-231	0.001
Protactinium-232	1
Protactinium-233	100
Protactinium-234	100
Uranium-230	0.01
Uranium-231	100
Uranium-232	0.001
Uranium-233	0.001
Uranium-234	0.001
Uranium-235	0.001
Uranium-236	0.001
Uranium-237	100
Uranium-238	100
Uranium-239	1,000
Uranium-240	100
Uranium-natural	100
Neptunium-232	100
Neptunium-233	1,000
Neptunium-234	100
Neptunium-235	100
Neptunium-236 (1.15x10 <sup>5</sup> y)	0.001
Neptunium-236 (22.5h)	1
Neptunium-237	0.001
Neptunium-238	10
Neptunium-239	100
Neptunium-240	1,000
Plutonium-234	10
Plutonium-235	1,000
Plutonium-236	0.001
Plutonium-237	100
Plutonium-238	0.001

<b>Appendix C</b> <b>Quantities<sup>1</sup> of Licensed or Registered Sources of Radiation</b>	
<b>Radionuclide</b>	<b>Quantity (μCi)*</b>
Plutonium-239	0.001
Plutonium-240	0.001
Plutonium-241	0.01
Plutonium-242	0.001
Plutonium-243	1,000
Plutonium-244	0.001
Plutonium-245	100
Americium-237	1,000
Americium-238	100
Americium-239	1,000
Americium-240	100
Americium-241	0.001
Americium-242m	0.001
Americium-242	10
Americium-243	0.001
Americium-244m	100
Americium-244	10
Americium-245	1,000
Americium-246m	1,000
Americium-246	1,000
Curium-238	100
Curium-240	0.1
Curium-241	1
Curium-242	0.01
Curium-243	0.001
Curium-244	0.001
Curium-245	0.001
Curium-246	0.001
Curium-247	0.001
Curium-248	0.001
Curium-249	1,000
Berkelium-245	100
Berkelium-246	100
Berkelium-247	0.001
Berkelium-249	0.1
Berkelium-250	10
Californium-244	100
Californium-246	1
Californium-248	0.01
Californium-249	0.001
Californium-250	0.001
Californium-251	0.001
Californium-252	0.001

Appendix C Quantities <sup>1</sup> of Licensed or Registered Sources of Radiation	
Radionuclide	Quantity (μCi)*
Californium-253	0.1
Californium-254	0.001
Any alpha emitting radionuclide not listed above or mixtures of alpha emitters of unknown composition	0.001
Einsteinium-250	100
Einsteinium-251	100
Einsteinium-253	0.1
Einsteinium-254m	1
Einsteinium-254	0.01
Fermium-252	1
Fermium-253	1
Fermium-254	10
Fermium-255	1
Fermium-257	0.01
Mendelevium-257	10
Mendelevium-258	0.01
Any radionuclide other than alpha emitting radionuclides not listed above, or mixtures of beta emitters of unknown composition	0.01

\* To convert μCi to kBq, multiply the μCi value by 37.

[NOTE: For purposes of LAC 33:XV.451.E, ~~LAC 33:XV.454.A~~, and ~~LAC 33:XV.485.A~~ where there is involved a combination of radionuclides in known amounts, the limit for the combination shall be derived as follows: determine, for each radionuclide in the combination, the ratio between the quantity present in the combination and the limit otherwise established for the specific radionuclide when not in combination. The sum of such ratios for all radionuclides in the combination may not exceed "1" or unity.]

<sup>1</sup>The quantities listed above were derived by taking 1/10th of the most restrictive ALI listed in Table I, Columns 1 and 2, of ~~LAC 33:XV.499.Appendix B to this Chapter~~, rounding to the nearest factor of 10, and constraining the values listed between 37 Bq and 37 MBq (0.001 and 1,000 μCi). Values of 3.7 MBq (100 μCi) have been assigned for radionuclides having a radioactive half-life in excess of E+9 years, except rhenium, 37 MBq or 1,000 μCi, to take into account their low specific activity.

Appendix D. - Appendix E.Footnote 1. ...

[Editor's Note: Appendix F has been moved to §399, as Appendix D.]

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq., and in particular R.S. 30:2104.

**HISTORICAL NOTE:** Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 19:1421 (November 1993), LR 20:653 (June 1994), LR 22:973 (October 1996), LR 24:2096 (November 1998), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 28:1012 (May 2002), amended by the Office of Environmental Assessment, LR 30:\*\*.

## **Chapter 5. Radiation Safety Requirements for Industrial Radiographic Operations**

### **Subchapter B. Personal Radiation Safety Requirements for Radiographers**

#### **§575. Training and Testing**

A. - C.1. ...

2. Records of Annual Refresher Safety Training and ~~Semiannual~~Quarterly Inspections of Job Performance. The records must list the topics discussed during the refresher safety training, the dates the annual refresher safety training was conducted, and the names of the instructors and attendees. For inspections of job performance, the records must also include a list showing the items checked and any noncompliance observed by the radiation safety officer or designee.

D. - E. ...

**AUTHORITY NOTE:** Promulgated in accordance with R.S. 30:2001 et seq.

**HISTORICAL NOTE:** Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 20:653 (June 1994), LR 20:999 (September 1994), LR 23:1138 (September 1997), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:2583 (November 2000), LR 27:1235 (August 2001), LR 28:1951 (September 2002), LR 29:34 (January 2003), LR 29:1470 (August 2003), amended by the Office of Environmental Assessment, LR 30:2029 (September 2004), LR 30:\*\*.

### **Subchapter C. Precautionary Procedures in Radiographic Operations**

#### **§588. Documents and Records Required at Temporary Job Sites and Applicable Field Stations**

A. - A.6. ...

7. a copy of the ~~cardwritten confirmation letter~~ issued by the department granting radiographer trainee status to any radiographer trainee performing industrial radiography at the temporary job site;

8. - 11. ...

**AUTHORITY NOTE:** Promulgated in accordance with R.S. 30:2001 et seq.



**HISTORICAL NOTE:** Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 20:653 (June 1994), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:2772 (December 2000), LR 27:1236 (August 2001), LR 28:1952 (September 2002), amended by the Office of Environmental Assessment, LR 30:\*\*.

## **Chapter 7. Use of Radionuclides in the Healing Arts**

### **§756. Full Calibration Measurements on Teletherapy Units, Remote Afterloader Units, and Gamma Stereotactic Radiosurgery Units**

A. - B.3. ...

4. A licensee shall make the full calibration measurements required by ~~Subsection A of this Sub~~Section in accordance with published protocols accepted by nationally-recognized bodies.

B.5. - C.7. ...

D. Records of Teletherapy Unit, Remote Afterloader Unit, and Gamma Stereotactic Radiosurgery Unit Full Calibrations.

1. —A licensee shall maintain a record of the teletherapy unit, remote afterloader unit, and gamma stereotactic radiosurgery unit full calibrations required by Subsections A, B, and C of this Section for three years. The record shall include:

- 1a. the date of the calibration;
- 2b. the manufacturer's name, model number, and serial number of the teletherapy, remote afterloader, or gamma stereotactic radiosurgery unit, the source, and the instruments used to calibrate the unit;
- 3e. the results and an assessment of the full calibrations;
- 4d. the results of the autoradiograph required for low dose-rate remote afterloader units; and
- 5e. the signature of the authorized medical physicist who performed the full calibration.

**AUTHORITY NOTE:** Promulgated in accordance with R.S. 30:2001 et seq.

**HISTORICAL NOTE:** Promulgated by the Department of Environmental Quality, Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 18:34 (January 1992), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 30:1182 (June 2004), amended by the Office of Environmental Assessment, LR 30:\*\*.

### **§757. Periodic Spot-Checks**

A. - A.3. ...

4. A licensee shall perform spot-checks required by Paragraph A.1 of this Section in accordance with procedures established by the ~~teletherapy~~ authorized medical physicist. The ~~teletherapy~~ authorized medical physicist does not need to actually perform the output spot-check measurements.

5. A licensee shall have the ~~teletherapy~~authorized medical physicist review the results of each output spot-check within 15 days. The ~~teletherapy~~authorized medical physicist shall promptly notify the licensee in writing of the results of each output spot-check. The licensee shall keep a copy of each written notification for two years.

A.6. - D.5.e. ...

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 18:34 (January 1992), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:2590 (November 2000), LR 30:1183 (June 2004), amended by the Office of Environmental Assessment, LR 30:\*\*.

## Chapter 15. Transportation of Radioactive Material

### §1503. Definitions

A. As used in this Chapter, the following definitions apply.

\* \* \*

$A_2$ —the maximum activity of radioactive material, other than special form, LSA, and SCO material, permitted in a Type A package. These values are either listed in ~~LAC 33:XV.1517~~, or may be derived in accordance with the procedure prescribed in, Appendix A of 10 CFR Part 71~~LAC 33:XV.1517~~.

\* \* \*

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:1267 (June 2000), amended by the Office of Environmental Assessment, LR 30:\*\*.

### §1505. Exemptions

A. - C.2. ...

D. Any physician licensed by the state of Louisiana to dispense drugs in the practice of medicine is exempt from LAC 33:XV.1502 with respect to transport by the physician of licensed material for use in the practice of medicine. However, any physician operating under this exemption must be licensed under LAC 33:XV.Chapter 7.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Environmental Assessment, LR 30:\*\*.

## Chapter 20. Radiation Safety Requirements for Wireline Service Operations and Subsurface Tracer Studies

### §2017. Design, Performance, and Certification Criteria for Sealed Sources Used in Downhole Operations

A. - A.1. ...

2. it must contain licensed radioactive material whose chemical and physical forms are as insoluble and nondispersible as practical; and

3. ~~it must meet the following requirements: it must have been individually pressure tested to at least 24,656 pounds per square inch absolute (170 MN/m<sup>2</sup>) without failure.~~

a. for a sealed source manufactured on or before July 14, 1989, the requirements of USASI N5.10-1968, "Classification of Sealed Radioactive Sources," or the requirements in Subsection C or D of this Section; or

b. for a sealed source manufactured after July 14, 1989, the oil well-logging requirements of ANSI/HPS N43.6-1997, "Sealed Radioactive Sources—Classification"; or

c. for a sealed source manufactured after July 14, 1989, the sealed source's prototype has been tested and found to maintain its integrity after each of the following tests:

i. Temperature Test. The test source must be held at -40°C for 20 minutes, 600°C for 1 hour, and then be subjected to a thermal shock test with a temperature drop from 600°C to 20°C within 15 seconds.

ii. Impact Test. A 5 kg steel hammer, 2.5 cm in diameter, must be dropped from a height of 1 m onto the test source.

iii. Vibration Test. The test source must be subjected to a vibration from 25 Hz to 500 Hz at 5 g amplitude for 30 minutes.

iv. Puncture Test. A 1 gram hammer and pin, 0.3 cm pin diameter, must be dropped from a height of 1 m onto the test source.

v. Pressure Test. The test source must be subjected to an external pressure of  $1.695 \times 10^7$  pascals (24,600 pounds per square inch absolute).

B. - E.2. ...

3. The requirements in Subparagraphs E.1.a-c of this Section do not apply to energy compensation sources (ECSs). ECSs must be registered with the U.S. Nuclear Regulatory Commission, an agreement state, or the Office of Environmental Services, Permits Division.

F. - F.1. ...

2. For well-logging applications without a surface casing for protecting fresh water aquifers, use of the ECS is only subject to the requirements of Subsections ~~E and~~ H of this

Section and LAC 33:XV.2004, 2014, 2015, 2016, and 2051.

G. - H. ...

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 18:34 (January 1992), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:2605 (November 2000), LR 29:1472 (August 2003), amended by the Office of Environmental Assessment, LR 30:\*\*.

**FISCAL AND ECONOMIC IMPACT STATEMENT  
FOR ADMINISTRATIVE RULES**

LOG #: RP037

Person

Preparing

Statement: Sandra StephensDept.: Environmental QualityPhone: (225) 219-3566Office: Environmental Assessment

Return

Address: DEQ  
P.O. Box 4314  
Baton Rouge, LA 70821-4314

Rule

Title: NRC Authorization Cleanup Package  
(LAC 33:XV.102, 113, 325, 326, 351,  
361, 361, 399, 421, 499, 575, 588,  
756, 757, 757, 1503, 1505, and 2017)

Date Rule

Takes Effect: Upon promulgation**SUMMARY**

(Use complete sentences)

In accordance with Section 953 of Title 49 of the Louisiana Revised Statutes, there is hereby submitted a fiscal and economic impact statement on the rule proposed for adoption, repeal or amendment. THE FOLLOWING STATEMENTS SUMMARIZE ATTACHED WORKSHEETS, I THROUGH IV AND WILL BE PUBLISHED IN THE LOUISIANA REGISTER WITH THE PROPOSED AGENCY RULE.

**I. ESTIMATED IMPLEMENTATION COSTS (SAVINGS) TO STATE OR LOCAL GOVERNMENTAL UNITS (Summary)**

There are no expected implementation costs or savings to state or local governmental units by the proposed rule.

**II. ESTIMATED EFFECT ON REVENUE COLLECTIONS OF STATE OR LOCAL GOVERNMENTAL UNITS (Summary)**

There is no estimated effect on revenue collections of state or local governmental units by the proposed rule.

**III. ESTIMATED COSTS AND/OR ECONOMIC BENEFITS TO DIRECTLY AFFECTED PERSONS OR NON-GOVERNMENTAL GROUPS (Summary)**

There are no estimated costs and/or economic benefits to directly affected persons or non-governmental groups by the proposed rule.

**IV. ESTIMATED EFFECT ON COMPETITION AND EMPLOYMENT (Summary)**

There is no estimated effect on competition and employment by the proposed rule.

\_\_\_\_\_  
Signature of Agency Head or Designee

\_\_\_\_\_  
Legislative Fiscal Officer or Designee

Wilbert F. Jordan, Jr., Assistant Secretary  
Typed Name and Title of Agency Head or Designee

\_\_\_\_\_  
Date of Signature

\_\_\_\_\_  
Date of Signature

LFO 03/09/2001

**FISCAL AND ECONOMIC IMPACT STATEMENT  
FOR ADMINISTRATIVE RULES**

The following information is requested in order to assist the Legislative Fiscal Office in its review of the fiscal and economic impact statement and to assist the appropriate legislative oversight subcommittee in its deliberation on the proposed rule.

- A. Provide a brief summary of the content of the rule (if proposed for adoption, or repeal) or a brief summary of the change in the rule (if proposed for amendment). Attach a copy of the notice of intent and a copy of the rule proposed for initial adoption or repeal (or, in the case of a rule change, copies of both the current and proposed rules with amended portions indicated).

Amendments include extending the application period for requesting a grievance hearing, correction of typographical errors, clarifications, stating specific requirements for NRC authorization, the moving of an appendix for compatibility, and restoring a footnote inadvertently lost in previous rulemaking.

- B. Summarize the circumstances which require this action. If the Action is required by federal regulation, attach a copy of the applicable regulation.

This rulemaking is necessary to correct minor typographical and name change errors and to keep Louisiana's radiation protection program current with its federal counterpart.

- C. Compliance with Act 11 of the 1986 First Extraordinary Session  
(1) Will the proposed rule change result in any increase in the expenditure of funds? If so, specify amount and source of funding.

No increase in expenditure of funds is expected by the proposed rule.

- 2) If the answer to (1) above is yes, has the Legislature specifically appropriated the funds necessary for the associated expenditure increase?

- (a) \_\_\_\_\_ Yes. If yes, attach documentation.  
(b) \_\_\_\_\_ No. If no, provide justification as to why this rule change should be published at this time.

This question is not applicable.

**FISCAL AND ECONOMIC IMPACT STATEMENT****WORKSHEET****I. A. COSTS OR SAVINGS TO STATE AGENCIES RESULTING FROM THE ACTION PROPOSED**

1. What is the anticipated increase (decrease) in costs to implement the proposed action?

COSTS	FY 04-05	FY 05-06	FY 06-07
PERSONAL SERVICES			
OPERATING EXPENSES			
PROFESSIONAL SERVICES			
OTHER CHARGES			
EQUIPMENT			
TOTAL	-0-	-0-	-0-
MAJOR REPAIR & CONSTR.			
POSITIONS (#)	-0-	-0-	-0-

2. Provide a narrative explanation of the costs or savings shown in "A.1.", including the increase or reduction in workload or additional paperwork (number of new forms, additional documentation, etc.) anticipated as a result of the implementation of the proposed action. Describe all data, assumptions, and methods used in calculating these costs.

The proposed rule should not result in any increase or decrease in costs to implement the proposed action.

3. Sources of funding for implementing the proposed rule or rule change.

SOURCE	FY 04-05	FY 05-06	FY 06-07
STATE GENERAL FUND			
AGENCY SELF-GENERATED			
DEDICATED			
FEDERAL FUNDS			
OTHER (Specify)			
TOTAL	-0-	-0-	-0-

4. Does your agency currently have sufficient funds to implement the proposed action? If not, how and when do you anticipate obtaining such funds?

The agency has sufficient funds to implement the proposed rule.



**B. COST OR SAVINGS TO LOCAL GOVERNMENTAL UNITS RESULTING FROM THE ACTION PROPOSED.**

1. Provide an estimate of the anticipated impact of the proposed action on local governmental units, including adjustments in workload and paperwork requirements. Describe all data, assumptions and methods used in calculating this impact.

There will be no impact on local governmental units.

2. Indicate the sources of funding of the local governmental unit which will be affected by these costs or savings.

This does not apply.

**FISCAL AND ECONOMIC IMPACT STATEMENT****WORKSHEET****II. EFFECT ON REVENUE COLLECTIONS OF STATE AND LOCAL GOVERNMENTAL UNITS**

- A. What increase (decrease) in revenues can be anticipated from the proposed action?

REVENUE INCREASE/DECREASE	FY 04-05	FY 05-06	FY 06-07
STATE GENERAL FUND _____			
AGENCY SELF-GENERATED _____			
RESTRICTED FUNDS* _____			
FEDERAL FUNDS _____			
LOCAL FUNDS _____			
TOTAL	-0-	-0-	-0-

\*Specify the particular fund being impacted.

- B. Provide a narrative explanation of each increase or decrease in revenues shown in "A." Describe all data, assumptions, and methods used in calculating these increases or decreases.

This does not apply.

**III. COSTS AND/OR ECONOMIC BENEFITS TO DIRECTLY AFFECTED PERSONS OR NONGOVERNMENTAL GROUPS**

- A. What persons or non-governmental groups would be directly affected by the proposed action? For each, provide an estimate and a narrative description of any effect on costs, including workload adjustments and additional paperwork (number of new forms, additional documentation, etc.), they may have to incur as a result of the proposed action.

There will be no costs and/or economic benefits to directly affected persons or non-governmental groups.

- B. Also provide an estimate and a narrative description of any impact on receipts and/or income resulting from this rule or rule change to these groups.

This does not apply.

**IV. EFFECTS ON COMPETITION AND EMPLOYMENT**

Identify and provide estimates of the impact of the proposed action on competition and employment in the public and private sectors. Include a summary of any data, assumptions and methods used in making these estimates.

There will be no impact on competition or employment in the public and private sectors from the proposed action.